

What is claimed is:

1. A catheter comprising:

an inflatable balloon having a proximal end, a distal end, and an inflation cavity therebetween;

a catheter shaft having the inflatable balloon affixed proximate a distal end thereof, the catheter shaft having an inflation lumen fluidly connected to the balloon inflation cavity and a guidewire lumen extending through the balloon cavity within a tubular member which is affixed to the inflatable balloon proximate the distal end; and

a reinforcing sleeve, having a proximal portion and a distal portion with a lumen extending therethrough, wherein the distal portion of the reinforcing sleeve extends into the inflation cavity with at least a portion of the tubular member slidably disposed through the lumen thereof and the proximal portion of the reinforcing sleeve is fixed relative to the catheter shaft and disposed in the catheter shaft inflation lumen.
2. The catheter of claim 1, wherein the catheter shaft comprises an outer member, wherein the reinforcing sleeve is attached to the outer member at a tack point.
3. The catheter of claim 2, wherein the reinforcing sleeve extends proximally to the tack point.
4. The catheter of claim 2, wherein the reinforcing sleeve extends proximally past the tack point.

5. The catheter of claim 4, wherein the reinforcing sleeve extends at least 15 cm proximally past the tack point.

6. The catheter of claim 1, wherein the catheter shaft comprises a guidewire receiving tube defining the guidewire lumen and having an outer diameter, wherein the reinforcing sleeve has an inner diameter that is at least as great as the outer diameter of the guidewire receiving tube.

7. The catheter of claim 1, wherein the guidewire receiving tube outer diameter is substantially the same as the reinforcing sleeve inner diameter.

8. The catheter of claim 1, wherein the guidewire receiving tube outer diameter is slightly greater than the reinforcing sleeve inner diameter.

9. The catheter of claim 1, wherein the reinforcing sleeve extends into the distal waist of the inflatable balloon.

10. The catheter of claim 1, wherein the reinforcing sleeve extends at least halfway through the inflation cavity.

11. A catheter comprising:
a guidewire tube having a distal end, a proximal end, a lumen therebetween, and an outer surface;

an outer tube disposed over the guidewire tube, the outer tube having a distal end, a proximal end and a lumen therebetween;

a balloon having a distal waist sealingly fixed to the guidewire tube, a proximal waist sealingly fixed to the outer tube, and an inflation cavity therebetween; and

a reinforcing sleeve having an outer surface attached to the outer tube, slidably disposed over the guidewire tube, and extending distally into the inflation cavity.

12. The catheter of claim 11, wherein the guidewire tube comprises an inner lubricious layer and an outer layer.

13. The catheter of claim 12, further comprising a tie layer between the inner lubricious layer and the outer layer.

14. The catheter of claim 11, wherein the inner surface of the reinforcing tube is in contact with the outer surface of the guidewire tube.

15. A catheter comprising:

a first elongate member having a proximal end, a distal end, and a lumen therebetween;

a second elongate member partially disposed in the lumen of the first elongate member having a proximal end, a distal end, and a lumen therebetween;

a third elongate member disposed on the second elongate member, the third elongate member having a distal end, a proximal end, and a lumen therebetween; and

an inflatable balloon member disposed on the second elongate member, the inflatable balloon member having a distal end, a proximal end, and a lumen therebetween;

wherein the distal end of the inflatable balloon member is sealingly connected to an outer surface of the second elongate member and wherein a proximal portion of the inflatable balloon member is sealingly connected to a first distal portion of the first elongate member;

wherein the third elongate member extends from a point proximal the distal end of the first elongate member to a point proximal the proximal end of the balloon; and

wherein a portion of the third elongate member proximate the balloon is rigidly connected to a distal portion of the first elongate member.

16. The catheter of claim 15, wherein the third elongate member is slidingly disposed on the second elongate member.

17. The catheter of claim 15, wherein the proximal end of the third elongate member is proximate the distal end of the balloon.

18. The catheter of claim 15, wherein the proximal end of the third elongate member is proximate the proximal end of the second elongate member.

19. The catheter of claim 15, wherein the third elongate member comprises an elastic material.

20. The catheter of claim 15, further comprising a tie material connecting the third elongate member to the first elongate member.

21. The catheter of claim 15, wherein the third elongate member is fused to the first elongate member.

22. The catheter of claim 15, wherein the second elongate member has a first outer diameter extending from proximate the proximal end of the third elongate member to proximate the distal end of the balloon.